Claims

What is claimed is:

1. A method of improving the reliability of peer-to-peer network downloads, comprising:

a) initiating a search from a client on a peer-to-peer network;

b) receiving a list of servers that satisfy the search;

c) selecting at least one of the servers from the list of servers;

d) selecting one of a plurality of downloading systems based on a predetermined criteria; and

e) downloading a file using one of the plurality of downloading systems.

2. The method of claim 1, wherein step (d) further includes the step of:

d1) selecting a multiple concurrent download system.

3. The method of claim 1, wherein step (d) further includes the step of:

d1) selecting a multiple concatenated download system.

4. The method of claim 1, wherein step (d) further includes the step of:

d1) selecting a serial concatenated download system.

5. The method of claim 1, wherein step (d) further includes the step of:

d1) determining a connection speed to the at least one of the servers.

6. The method of claim 1, wherein step (d) further includes the step of:

d1) comparing a connection speed to the at least one of the servers to an available bandwidth.

7. The method of claim 1, wherein step (a) further includes the steps of:

a1) entering a text string.

8. The method of claim 1, wherein step (a) further includes the step of:

a1) entering a unique key.

9. The method of claim 1, wherein step (a) further includes the step of:

a1) broadcasting a search query to the peer-to-peer network.

10. The method of claim 1, wherein step (a) further includes the step of:

a1) transmitting a search query to a central server.

11. The method of claim 1, wherein step (b) further includes the step of:

b1) receiving a document name.

12. The method of claim 1, wherein step (b) further includes the step of:

b1) receiving a file size.

13. The method of claim 1, wherein step (b) further includes the step of:

b1) receiving a source node for a file.

14. The method of claim 1, wherein step (b) further includes the step of:

b1) receiving an available bandwidth at a server.

15. A method of improving the reliability of peer-to-peer network downloads, comprising the steps of:

a) originating a search from a client on a peer-to-peer network;

b) broadcasting a search query over the peer-to-peer network;

c) receiving a list of servers and a list of associated document names that satisfy the search query;

d) selecting at least one of the servers from the list of servers;

e) determining one of a plurality of downloading systems based on a predetermined criteria; and

f) downloading a file.

16. The method of claim 15, wherein step (a) further including the step of:

a1) entering a unique key that identifies the file.

17. The method of claim 15, wherein step (c) further includes the step of:

c1) receiving a file size, a source node and a unique key.

18. The method of claim 15, wherein step (d) further includes the step of:

d1) measuring a connection speed to a plurality of servers;

d2) comparing the connection speed of the plurality of servers to an available bandwidth to the client.

19. The method of claim 15, wherein step (e) further includes the steps of:

e1) determining if an available bandwidth is less than a connection speed to two of the servers;

e2) when the available bandwidth is less than the connection speed to two of the servers, selecting a serial concatenated download system.

20. The method of claim 19, further including the steps of:

e3) when the available bandwidth is not less than the connection speed to two of the servers, selecting a multiple concurrent download system.

21. The method of claim 19, further including the steps of:

e3) when the available bandwidth is not less than the connection speed to two of the servers, selecting a multiple concatenated download system.

22. The method of claim 19 wherein step (e2) further includes the steps of:

i) starting a download from one of the list of servers;

ii) if the one of the list of servers is interrupted during the download, selecting a second of the list of server to start a download;

iii) requesting the download to start at a next byte after a last received byte.

23. The method of claim 20, wherein step (e3) further includes the steps of:

i) starting a download from at least two of the servers;

ii) if any of the at least two of the servers finishes the download, terminating the download for any other servers.

24. The method of claim 21, wherein step (e3) further includes the steps of:

i) starting a first download at a first byte of the file for one of the at least two servers;

ii) starting a second download at a second byte of the file for a second of the at least two servers;

iii) determining when a complete file has been downloaded by combining the first download and the second download.

25. A method of operating a peer-to-peer network comprising the steps of:

a) initiating a search from a first peer to the peer-to-peer network;

b) receiving a list of peer servers that meet a search query;

c) selecting one of a plurality of downloading systems based on a predetermined criteria; and

d) downloading a file using the one of the plurality of downloading systems.

26. The method of claim 25, wherein step (c) further includes the steps of:

c1) determining a connection speed to each of the peer servers on the list of peer servers;

c2) selecting a subset of the list of peer servers based on the connection speed.

27. The method of claim 26, wherein step (c1) further includes the step of:

i) receiving a test file from each of the servers on the list of servers.

28. The method of claim 26, wherein step (c1) further includes the step of:

i) determining an order of response receipt from each of the servers on the list of servers.

29. The method of claim 26, wherein step (c1) further includes the step of:

i) pinging each of the servers on the list of servers.

30. The method of claim 25, wherein the step (d) further includes the steps of:

d1) when an available bandwidth is less than a two times a connection speed, selecting a server with a fastest connection speed;

d2) starting a download from the server with the fastest connection speed.

31. The method of claim 29, further including the steps of:

d3) determining if the server with the fastest connection speed had an error before the file was downloaded;

d4) when the server with the fastest connection speed had an error before the file was downloaded, selecting a second server;

d5) determining a last byte received;

d6) transmitting a download starting from a next byte command to a second server.

32. The method of claim 25, wherein the step (d) further includes the steps of:

d1) when an available bandwidth is not less than a two times a connection speed, selecting a plurality of servers from the list of servers;

d2) starting a plurality of simultaneous downloads from the plurality of servers.

33. The method of claim 32, further including the steps of:

d3) determining if the client has received a complete version of the file from one of the plurality of servers;

d4) when the client has received a complete version of the file from one of the plurality of servers, terminating a rest of the downloads.

34. The method of claim 25, wherein the step (d) further includes the steps of:

d1) when an available bandwidth is not less than a two times a connection speed, selecting a plurality of servers from the list of servers;

d2) starting a plurality of simultaneous offset downloads from the plurality of servers.

35. The method of claim 34, further including the step of:

d3) when a complete file can be formed from the plurality of simultaneous offset downloads, constructing a complete file.

36. A method of operating a peer-to-peer network comprising the steps of:

a) initiating a search from a first peer to the peer-to-peer network;

b) receiving a list of peer servers, a plurality of associated file names, a plurality of file sizes, a plurality of bandwidths and a plurality of source nodes that meet a search query;

c) determining a connection speed to each of the peer servers on the list of peer servers;

d) selecting a subset of the list of peer servers based on the connection speed;

e) when an available bandwidth is less than a two times the connection speed, selecting a server with a fastest connection speed;

f) starting a download from the server with the fastest connection speed;

g) determining if the server with the fastest connection speed had an error before the file was downloaded;

h) when the server with the fastest connection speed had an error before the file was downloaded, selecting a second server;

i) determining a last byte received;

j) transmitting a download starting from a next byte command to a second server;

k) when an available bandwidth is not less than a two times a connection speed, selecting a plurality of servers from the list of servers;

l) starting a plurality of simultaneous downloads from the plurality of servers;

m) determining if the client has received a complete version of the file from one of the plurality of servers; and

n) when the client has received a complete version of the file from one of the plurality of servers, terminating a rest of the downloads.